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COST UNITS

WILLIAM ARTHUR CHASE

Eminent economists have asserted that the requisites of production are two, labor and appropriate natural objects. Labor is either bodily or mental, while of the other requisite appropriate natural objects it is seen that some objects suited to the supply of human wants exist or grow up spontaneously. There are caves and hollow trees capable of affording shelter; fruit, roots, wild honey, and other natural products on which human life can be supported. But, even here a considerable quantity of labor is generally required not for the purpose of creating, but of finding and appropriating them.

Nature, however, does more than supply materials, she also supplies powers. The matter of the globe is not an inert recipient of forms and properties impressed by human hands, it has active energies by which it coöperates with labor and which may even be used as a substitute for it.

The finished product of one industry may be the appropriate natural object of another. Wool, for example, is the raw material of the carder and spinner; the finished product, the yarn, that of the weaver. The labor which terminates in the production of an article fitted for some human use is either employed directly about the thing or about a previous operation destined to facilitate, perhaps essential to, the possibility of the subsequent ones. One of the modes in which labor is remotely instrumental to the production of a thing is when it is employed in producing subsistence to maintain the laborers while they are engaged in the production. This previous employment of labor is an indispensable condition to every productive operation on any other than the very smallest scale. Productive operations require to be continued a certain time before their fruits are obtained, and it follows that besides the primary and universal requisites of production—labor and natural agents—there is another requisite without which no productive operations beyond the rude and scanty beginnings of primitive industry are possible; namely, a stock previously accumulated of the products of former labor. This accumulated stock of the produce of labor is termed capital.

The institution of private property being assumed, the three requisites of production, then, are labor, capital, and land;

understanding by capital the means and appliances which are the accumulated results of previous labor, and by land the materials and instruments supplied by nature, whether contained in the interior of the earth or constituting its surface. Since each of these elements of production may be separately appropriated, the industrial community may be considered as divided into land owners, capitalists, and productive laborers. Each of these classes, as such, obtains a share of the produce. No other person or class obtains anything except by concession from them. The remainder of the community is in fact supported at their expense, giving, if any equivalent, one consisting of unproductive services. These three classes, therefore, are considered in economic science, or as it is sometimes called, political economy, as making up the whole community.

Owing to a most unfortunate and unscientific use of the terms "productive" and "unproductive" by the average business man, and, I am sorry to have to admit, by some accountants also, a word of warning and of explanation may not here be out of place.

"Productive labor" by economists is defined to be labor that terminates in the creation of material wealth, and "unproductive labor" that which ends in immediate enjoyment without any increase of the accumulated stock of permanent means of enjoyment.

The labor of saving a friend's life is not productive unless the friend is a productive laborer. To a religious person, the saving of a soul must appear a far more important service than the saving of a life, but he will not, therefore, call a missionary a productive laborer unless he teaches, as certain missionaries have in some cases done, the arts of civilization in addition to the doctrines of his religion.

Looked at in this light, the labor of the factory superintendents, of the men who sweep the floors, of the administrators, of the bookkeepers, of the public accountants, to whose competent advice and supervision in these modern times the success of the enterprise is often largely due, of the lawyers who examine and prepare the legal documents, of the doctors who bind up broken limbs—the labor of these is just as productive as that of the workmen who handle the looms, or who work at the machines.

Having considered, perhaps sufficiently for our present purpose, as elements of production, the factor of labor, we will glance for a moment at the remaining two, land and capital.

First, as to land: The only person besides the laborer and the capitalist whose consent is necessary to production, and who can claim a share of the produce as the price of that consent, is the person who by the arrangements of society possesses exclusive power over some natural agent; and his remuneration for its use is entitled rent. And the rent which any land will yield is the excess of its produce beyond that which would be returned to the same capital if employed on the worst land in cultivation or use. Hence, as a prime element in the cost of production, we get rent.

Secondly, as to capital: Capital is wealth appropriated to reproductive employment, and it is hardly necessary to remark when addressing so distinguished an audience that money is no more synonymous with capital than it is with wealth. Industry is limited by capital; it is the result of saving, and it is constantly being consumed; it is kept up not by preservation, but by perpetual reproduction.

Capital is usually divided into two species, circulating and fixed. An example of the former would be that portion of capital which consists of materials. The tallow and alkali of which soap is made, once used in the manufacture, are destroyed as alkali and tallow and cannot be employed any further in the soap manufacture, though in their altered condition as soap, they are capable of being used as a material or an instrument in other branches of manufacture. Capital which fulfils the whole of its office in the production in which it is engaged by a single use is called circulating capital.

Another large portion of capital, however, denominated fixed, consists in instruments of production of a more or less permanent character, which produce their effect not by being parted with, but by being kept, and the efficiency of which is not exhausted by a single use. To this class belong buildings, machinery, and all or most things known by the name of implements or tools. But even these, no matter of how permanent a nature or how well repaired, must in the course of time wear out or cease to be valuable; and it cannot be considered that the entire cost of a given product is known unless or until the replacement of this particular portion of capital constantly, though slowly, being consumed is provided for; and hence arises as an element in the cost of production what is known as depreciation.

If all that is produced is not consumed, a profit will result. As the wages of the laborer are the remuneration of labor, the profits

of the capitalist are the reward of abstinence. They are what he gains by forbearing to consume his capital for his own uses; and for this forbearance he requires a recompense, which is resolvable into three parts: interest, insurance, and the wages of superintendence.

Of the gains which the possession of an amount of capital enables a person to make, a part only is properly an equivalent for the use of the capital itself; namely, as much as a solvent person would be willing to pay for the loan of it. This, which as everybody knows is called interest, is all that a person is enabled to get by merely abstaining from the immediate consumption of his capital and allowing it to be used for productive purposes by others. The remuneration which is obtained in any country for mere abstinence is measured by the current rate of interest on the best security—such security as precludes any appreciable chance of losing the principal.

The rate of profit, however, greatly exceeds the rate of interest. The surplus is partly compensation for the risk. By lending his capital on unexceptionable security a person runs little or no risk, but, if he embarks in business either as an individual, a member of a firm, or a stockholder in a corporation, he always exposes his capital to some and in many cases to very great danger of partial or total loss. For this danger he must be compensated, otherwise he will not incur it.

If he should, either as an individual, a member of a firm, or a stockholder in a corporation, devote his time and labor to the conduct or control of the business, he must be rewarded for such devotion. To exercise control with efficiency, if the concern is large and complicated, requires great assiduity and often no ordinary skill; and this assiduity and skill must be remunerated.

But I understand this factor, which the older economists called “wages of superintendence”, the modern economists do not recognize as an element of profit.

Such, it is conceived, is a brief presentation of the economic principles which apply in determining the various factors which analysis discloses as elements in the cost of production; and it only remains to inquire whether it is possible to exhibit the various data in such a form as to meet at one and the same time the requirements of the economist and those of ordinary business.

On the threshold of this inquiry I am confronted by a slight difficulty. So much of the so-called accounting work of the coun-

try has in the past been done, or professedly done, by manufacturing stationers, self-styled systematizers, bookkeeper-out-of-employment accountants, pseudo-experts, *et hoc genus omne*, that it may well be that heretofore accounts have been presented in such a manner as to be of little service to economists, while it is undoubtedly true that the business man after having paid heavily for them has not infrequently found them woefully misleading.

It is also true that the profession of reputable and competent public accountancy has itself broadened and deepened in the last twenty-five years (we have had for example the passage of certified public accountant laws by various states and greater activity on the part of the American Association of Public Accountants) and some things that in the past may have been looked upon in a certain light are now regarded in a different and a truer. But taking the best practice of the profession today, I venture to think that it is the custom to present accounts relating to the cost of production in such a manner that, with perhaps a slight change in one or two particulars, the information which for the purpose of scientific knowledge economists need lies ready to their hands. If this is not so, then I sincerely hope that the progress of this debate may disclose wherein the defect exists.

Bearing in mind what has been already said as to the finished product of one industry's being the raw material of another, may we, or may we not, assume that the raw material of the wholesale merchant will be the finished product of the manufacturer, while that of the retail tradesman will be the output of the wholesale merchant, and that of the railroad that which is necessary to produce its freight and traffic earnings?

If we may, then, since it is more natural to begin at the beginning, we will, bearing in mind that in this event one general principle will govern all, take the case of a manufacturer, one if you please who uses as his raw material some product of nature in its primary state and who produces therefrom some finished article which he distributes or sells to the wholesale merchant. I conceive that it is quite immaterial and indeed a mere waste of time in a discussion such as this to enter too much into details. I imagine that what is important is that we should get our genera right and our species right, and that then the sub-species may be left for our present purpose to take care of themselves. Inasmuch as most businesses are now carried on under a corporate form, we will assume this condition, not forgetting that

what is said will be equally applicable fundamentally to an individual enterprise or to a copartnership.

We shall have then three genera or main divisions, and the first two will be of the nature that in their main outlines are likely to be insisted upon by accountants and business men, and will consist of what are often called a manufacturing account and a profit and loss account. The first is charged with the materials on hand, if any, at the beginning of the period, with materials purchased, with freight inwards, with labor, with fuel or power, with what is sometimes called indirect labor and expense, with repairs, with depreciation, with rent, in short with those factors that are considered to make up the prime cost of the commodities manufactured. If we add up these various factors set down in a given period and deduct the materials on hand at its close, we arrive at the cost of the commodities manufactured in this period so far as the elements of cost are composed of the factors stated. If we further deduct this remainder from the sales, minus returns, allowances, and trade discounts, we arrive at what is known as the gross profit; and this statement of gross profit is what the manufacturer and trader will, I think, very properly be likely to insist upon.

Now the question is, is there any objection in principle on the part of the economist to division number one's showing the gross profit?

In division number two we are likely to get such items as, wholly or in part, wages of superintendence, which may include officers' salaries (or in the case of an individual enterprise, proprietors' salaries); general office salaries and expenses such as stationery, postage, etc.; and salesmen's salaries and expenses; in a word those expenses which must be incurred before the commodities produced can be placed in the hands of the customers of the concern. If we add up these various factors and deduct them from the credit balance or gross profit brought down, we arrive at the net profit. Again, I ask, has the economist any objection to this form of the second division? There is a certain amount of dispute among accountants as to what, if any, proportion of the charges in division number two should appear in division number one; but this I imagine is a matter with which the economist will not be greatly concerned. Indeed I am rather inclined to think that for the purpose of his inquiry he might

regard divisions one and two as forming one whole, but this is a point upon which I seek more light.

It will be observed that I have so far said nothing about interest, and now I suggest a third division. In this on the credit side I would ultimately show interest on capital, which having been previously charged in the first division would emerge ultimately in the third.

As to this interest: It has usually been the custom in the case of individuals and copartnerships to charge and credit interest on the capital employed, though not in the case of corporations. Now I suggest that this should be changed, and that in the accounts of corporations also interest on the capital and surplus, if there be any surplus, should be computed in accordance with the law of interest referred to in a former part of this paper, and that such interest should be charged and credited. Our third division would then assume this aspect. On the credit side would appear interest and there would further be the net profit, or insurance as Mill calls it, that is, compensation for risk, brought down from the second division. Thus the two elements of profit would be differentiated and shown in the accounts, and could be readily ascertained.

In the case of the individual or copartnership as to interest: Division three would be debited and the credit would usually be finally to the proprietors' current accounts, in that of the corporation, the credit being to surplus, and as I have already indicated, the elements of rent, wages of superintendence, and interest would be shown and differentiated as charges or factors in the cost of the product.

I do not anticipate that any serious objection on the part of accountants would be raised to the foregoing method of statement except possibly as to interest in the case of corporations; but it is no answer to a suggestion to say that because a thing never has been done therefore it never should be done.

It is often a characteristic of the average practitioner to be the slave of technicalities; to the great practitioner, technicalities are merely the handmaids of principles. I remember as a boy being greatly impressed with the verbiage of legal documents. I thought within myself, can any one but a very superior person ever be sufficiently learned to compose a thing so fearfully and wonderfully made; but I was greatly relieved and not a little amused when I came to read Blackstone to find that this great

lawyer described much of this verbiage as nothing, to use his own expression, but "attorneys' rubbish."

The method which I have outlined would be comparatively simple if in its application it were necessary to deal only with factories or departments whose output consisted of products having one value and made from the same formula. For example, suppose within a given time a factory produces at a total expense of \$1000 500 rolls of roofing of the same quality, it is obvious that the cost of each roll will be \$2. But many factories are engaged in producing many different things of different qualities. These have to be thrown into groups until each group is brought within the principles I have briefly described. Now, although this can be done, and as a matter of fact is done in certain factories highly equipped and organized, yet the average manufacturer is very likely to tell you that the game is not worth the candle, that the expense is out of proportion to the value of the result, and that his system of more or less accurate guessing at individual costs is good enough for him as a practical man.

But I venture to think that, even if the time is still far distant when accurate individual or unit costs will be obtained in every industry in the land, nevertheless, accounts dealing with enterprises as a whole, presented in the manner I have referred to—which could be done with little or no extra expense or economic waste—would afford valuable information, not only to the business world, but also to the economist—in this way: the economist could show in dealing with the various data what percentage of the cost must be allocated to materials, to the various classes of labor, to the wages of superintendence, to rent, to interest, to depreciation, and so on; and what proportion of the profit has been awarded to the capitalist as the reward of abstinence. And it seems to me that the profit and loss account and balance sheet (to use Professor Robinson's happy phrase) of a given society or nation made up in this way would be a splendid result to achieve.

In conclusion, I should like to be allowed to say that I feel that the Certified Public Accountants of the United States are much indebted to the American Economic Association for the invitation that has been given them to take part in its discussions. Before Bacon, the plan as to religious, social, and physical phenomena was often to spin a theory out of one's own ill-informed mind and then to try to make the facts fit the theory; since

Bacon's time, at any rate in relation to physical and economic science, the more rational method has been adopted of investigating first and then of making the theory fit the facts. And in the investigation of the facts which afford the data of economic science the economist strictly so-called and the accountant are I think but parts of one whole.

It has been the custom for many years among more or less illiterate persons to indulge in rather sorry jests at the expense of the votaries of what they have denominated the dismal science of political economy. Such, however, should learn that in its bearing upon the best interests and welfare of society it is a science and a philosophy,

"Not harsh and crabbed as dull fools suppose,
But musical as is Apollo's lute."

As the same great poet has said,

"Peace hath her victories
No less renowned than war,"

and when mankind shall resolve to devote the energies they have expended in endeavoring to destroy one another to the investigation of the phenomena with which they are surrounded—which is probably what they were placed in the world to do—with the object of improving and ameliorating as far as may be their ethical, social, and physical condition, it will be seen, I believe, that what Mill called the present low state of improvement will in comparison with the past advance by leaps and bounds; and when this happy time shall have arrived, I venture to predict it will be recognized that those who have contributed not the least to this result have been these same economists, and that their painstaking inquiries were among the noblest efforts that could engage the attention of the human mind.